

BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF HAWAII

----- In the Matter of ----- )  
HAWAII ELECTRIC LIGHT )  
COMPANY, INC. )  
Regarding Integrated Resource )  
Planning. )  
\_\_\_\_\_ )

DOCKET NO. 04-0046

DECISION AND ORDER NO. 23977

Filed Jan. 24, 2008

At 11:30 o'clock A.M.

Karen Higashi  
Chief Clerk of the Commission

ATTEST: A True Copy  
KAREN HIGASHI  
Chief Clerk, Public Utilities  
Commission, State of Hawaii.

Karen Higashi

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PUBLIC UTILITIES COMMISSION  
STATE OF HAWAII

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By this Decision and Order, the commission approves HAWAII ELECTRIC LIGHT COMPANY, INC.'s ("HELCO") third integrated resource plan ("IRP-3") and program implementation schedule ("Action Plan"); and HELCO and the DIVISION OF CONSUMER ADVOCACY, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS' ("Consumer Advocate")<sup>1</sup> "Stipulation Regarding Hearing and Commission Approval" dated November 16, 2007.

## Background

## IRP Framework

By Decision and Order No. 11523, filed on March 12, 1992, as amended by Decision and Order No. 11630, filed on May 22, 1992, in Docket No. 6617, the commission established a

<sup>1</sup>The Consumer Advocate is an ex officio party pursuant to Hawaii Revised Statutes ("HRS") § 269-51, and Hawaii Administrative Rules ("HAR") § 6-61-62(a).

Framework for Integrated Resource Planning ("IRP Framework"), and required HELCO, the other electric utilities in Hawaii and Gasco, Inc. to develop integrated resource plans ("IRP") in accordance with the IRP Framework.

According to the IRP Framework, the "goal of integrated resource planning is the identification of the resources or the mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost."<sup>2</sup>

The governing principles of integrated resource planning are:

1. The development of integrated resource plans is the responsibility of each utility.
2. Integrated resource plans shall comport with state and county environmental, health, and safety laws and formally adopted state and county plans.
3. Integrated resource plans shall be developed upon consideration and analyses of the costs, effectiveness, and benefits of all appropriate, available, and feasible supply-side and demand-side options.
4. Integrated resource plans shall give consideration to the plans' impacts upon the utility's consumers, the environment, culture, community lifestyles, the State's economy, and society.
5. Integrated resource plans shall take into consideration the utility's financial integrity, size and physical capability.
6. Integrated resource planning shall be an open public process. Opportunities shall be provided for participation by the public and governmental agencies in the development and in commission review of integrated resource plans.

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<sup>2</sup>IRP Framework, Section II.A., at 3.

7. The utility is entitled to recover all appropriate and reasonable integrated resource planning and implementation costs. In addition, existing disincentives should be removed and, as appropriate, incentives should be established to encourage and reward aggressive utility pursuit of demand-side management programs. Incentive mechanisms should be structured so that investments in suitable and effective demand-side management programs are at least as attractive to the utility as investments in supply-side options.

IRP Framework, Section II.B, at 3-4.

The commission's responsibility in integrated resource planning, as articulated in the IRP Framework, "is to determine whether the utility's plan represents a reasonable course for meeting the energy needs of the utility's customers and is in the public interest and consistent with the goals and objectives of integrated resource planning."<sup>3</sup> "Specifically, the commission will review the utility's integrated resource plan, its program implementation schedule, and its evaluations, and generally monitor the utility's implementation of its plan. Upon review, the commission may approve, reject, approve in part and reject in part, or require modifications of the utility's [IRP] and program implementation schedule."<sup>4</sup> "To the extent possible, the commission will hear the utility's application for approval of its [IRP] within six months of the plan's filing, and the commission will render its decision shortly thereafter."<sup>5</sup>

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<sup>3</sup>IRP Framework, Section II.D.1, at 5.

<sup>4</sup>IRP Framework, Section II.D.2, at 5.

<sup>5</sup>IRP Framework, Section II.D.3, at 5.



B.

IRP-1 and IRP-2

By Order No 11526, filed on March 13, 1992, in Docket No. 7259, the commission opened HELCO's first IRP planning docket ("IRP-1"), and directed HELCO to complete and submit its IRP plan and implementation schedule to the commission by May 1, 1993. The deadline was subsequently extended to October 15, 1993.

HELCO filed its IRP-1 and program implementation schedule on October 15, 1993. An evidentiary hearing was held from October 12, 1994, through October 18, 1994. Following the filing of opening and reply briefs, the commission issued Decision and Order No. 14708, on May 29, 1996, approving HELCO's proposed IRP and action plans. The commission ordered HELCO to submit its first annual evaluation report of its IRP and program implementation schedule by June 1, 1997. The commission also ordered HELCO to conduct a major review of its IRP by adopting a new 20-year planning horizon, repeating the planning process, and reanalyzing its resource programs by July 1, 1997.

By Order No. 15977, filed on September 26, 1997, in Docket No. 97-0349, the commission opened a docket to commence HELCO's next integrated resource planning cycle ("IRP-2"). By Order No. 20792, filed on February 4, 2004, the commission approved HELCO and the Consumer Advocate's "Stipulation Regarding Proceeding" in which HELCO was to file its first annual evaluation report of IRP-2 no later than March 31, 2004, and

HELCO was to file its revised IRP-3 and action plans no later than October 31, 2005. Under the stipulation, "IRP-2 and Action Plans will have the status of plans filed with but not approved by the commission."

On March 31, 2004, HELCO filed its Evaluation Report of IRP-2, which assessed the then-current validity of the forecasts and assumptions used in IRP-2, and assessed the IRP-2 Preferred Plan in the existing planning context. The Evaluation Report provided updates and revised Action Plan items for the range of resource options available to meet the future energy needs of HELCO's customers. The IRP-2 Evaluation Report was not subject to commission approval.

According to HELCO, since the filing of its IRP-2 Evaluation Report, there have been changes in key assumptions, which include a rapid rise in oil prices, continuing rapid growth in West Hawaii, new regulatory rulings (issuance of Decision and Order No. 22238 in Docket No. 03-0371 (Distributed Generation); Decision and Order No. 23121 in Docket No. 03-0372 (Competitive Bidding); Decision and Order No. 23258 in Docket No. 05-0069 (Energy Efficiency)), and legislative changes (Renewable Portfolio Standards law).<sup>6</sup>

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<sup>6</sup>HELCO IRP-3, at ES-2.

C.

IRP-3

1.

Initiation of the Docket

By Order No. 20821, filed on February 26, 2004, the commission opened this docket to commence HELCO's IRP cycle and examine HELCO's IRP-3 to be submitted no later than October 31, 2005, pursuant to Section III.C.1 of the IRP Framework. The deadline was subsequently extended to May 31, 2007.<sup>7</sup>

2.

Filing of IRP-3

On May 31, 2007, HELCO filed its IRP-3.<sup>8</sup> Included were descriptions of HELCO's planning process and methods, its planning assumptions and forecasts, its objectives for the plan, the results of its analysis and its Advisory Group process, its Preferred Plan, and its five-year Action Plan. Also included was HELCO's Sustainability Strategy.<sup>9</sup>

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<sup>7</sup>The deadline for HELCO to file its IRP-3 was October 31, 2005. The commission subsequently granted HELCO additional time, until May 31, 2007, to file its IRP-3. See Order No. 22105, filed on November 4, 2005; Order No. 23152, filed on December 21, 2006.

<sup>8</sup>HELCO's Transmittal Letter; and HELCO's Integrated Resource Plan, 2007 - 2026, Volumes 1 - 3, filed on May 31, 2007.

<sup>9</sup>"HELCO's Sustainability Strategy is a vision beyond that of its Preferred Plan for HELCO to strive towards.

Notice of the filing of HELCO's IRP-3 was published in newspapers of general circulation on June 5, 2007, in the Honolulu Advertiser, Hawaii Tribune-Herald, and West Hawaii Today,<sup>10</sup> pursuant to Section III.E.3 of the IRP Framework.

3.

Prehearing Order

On June 8, 2007, the commission issued Prehearing Order No. 23485, setting forth the issues, procedures, and schedule for this proceeding. The following deadlines were established: (1) August 6, 2007 for HELCO to file its direct testimonies and exhibits; (2) September 28, 2007 for the Consumer Advocate and any persons subsequently named as intervenors to file their direct testimonies and exhibits; and (3) October 29, 2007 for HELCO to file its rebuttal testimonies and exhibits.

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The Sustainability Strategy is consistent with its Preferred Plan but incorporates the potential for utilization of biofuels, additional wind resources, other alternative energy resources, and firm capacity renewable energy distributed resources." HELCO IRP-3, at 11-9. According to the Consumer Advocate, the Sustainability Strategy "offers an alternative development of renewable resources in the later stages of the planning period, addressing the potential for accelerated development of renewable[] resources and the inclusion of biofuels and other emerging technologies." CA-T-1, at 44.

<sup>10</sup>See HELCO's Letter, dated June 28, 2007.

Consistent with prehearing orders issued in other IRP dockets,<sup>11</sup> the commission identified the following issues for resolution in this docket:

1. Whether HELCO's proposed integrated resource plan and program implementation schedule complies with the commission's IRP Framework. Included in this issue are the following sub-issues:
  - A. Whether HELCO's proposed integrated resource plan represents a reasonable course for meeting the energy needs of its customers.
  - B. Whether HELCO's proposed integrated resource plan is in the public interest and consistent with the goals and objectives of integrated resource planning.
  - C. Whether HELCO's proposed integrated resource plan identifies the resources or mix of resources for meeting near and long-term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost.
  - D. Whether HELCO's proposed integrated resource plan comports with state and county environmental, health, and safety laws and formally adopted state and county plans.
  - E. Whether HELCO's proposed integrated resource plan considers and analyzes the cost effectiveness and benefits of all appropriate, available, and feasible supply-side and demand-side options.
  - F. Whether HELCO's proposed integrated resource plan considers the plan's impacts upon the utility's consumers, the environment, culture, community lifestyles, the State of Hawaii's economy, and society.

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<sup>11</sup>See In re Maui Elec. Co., Ltd., Docket No. 04-0077, Prehearing Order No. 23453, filed on May 22, 2007 (MECO IRP-3) (citing to In re Maui Elec. Co., Ltd., Docket No. 7258, Prehearing Order No. 13171, filed on March 9, 1994 (MECO IRP-1); In re Hawaiian Elec. Co., Inc., Docket No. 95-0347, Stipulated Prehearing Order No. 16596, filed on October 8, 1998 (HECO IRP-2); and In re Hawaiian Elec. Co., Inc., Docket No. 7257, Prehearing Order No. 12610, filed on September 17, 1993 (HECO IRP-1)).

- G. Whether HELCO's proposed integrated resource plan takes into consideration the utility's financial integrity, size, and physical capability.
  - H. Whether HELCO's proposed integrated resource planning process provided an opportunity for participation by the public and governmental agencies in the development of its integrated resource plan.
  - I. Whether HELCO's proposed integrated resource plan provides for the recovery of all appropriate and reasonable integrated resource planning and implementation costs.
  - J. Whether HELCO's findings and recommendations regarding the identification, quantification, and utilization of externalities are reasonable for comparisons between resource plans within the context of integrated resource planning.
2. Whether the commission should adopt the fuel diversity and fossil fuel generation efficiency standards set forth in Sections 111(d)(12), 111(d)(13), and 112(b)(3)(A) of the Public Utility Regulatory Policies Act of 1978 ("PURPA"), as amended by the Energy Policy Act of 2005.

4.

Motions to Intervene

Timely motions to intervene were filed by Life of the Land ("LOL") on June 15, 2007, and by Hawaii Renewable Energy Alliance ("HREA") on June 21, 2007. Over HELCO's objections, the commission granted the motions to intervene by Order No. 23540, filed on July 12, 2007.

Discovery, Testimonies and Prehearing Conference

HELCO filed its Direct Testimonies on August 6, 2007. HELCO submitted written testimonies from eleven witnesses: Warren H.W. Lee, President, HELCO; Curtis A. Beck, Manager, Energy Services Department, HELCO; Patrick B. Moore, Administrator, Energy Services Department, HELCO; Norman Verbanic, Manager, Production Department, HELCO; Arthur Seki, Director, Technology Division, Hawaiian Electric Company, Inc. ("HECO"); Scott W.H. Seu, Manager, Energy Projects Department, HECO; Ross H. Sakuda, Director, Generation Planning Division, HECO; Marc M. Matsuura, Director, Transmission Planning Division, HECO; Barry M. Nakamoto, Director, Generation Bidding Division, HECO; Gary A. Hashiro, Director, Integrated Resource Planning Division, HECO; and Kenneth B.K. Fong, Project Manager, Power Supply Engineering Department, HECO.

The Consumer Advocate filed its Direct Testimonies on September 28, 2007. The Consumer Advocate submitted written testimonies from two witnesses: Daniel Peaco, President, La Capra Associates, Inc.; and Richard S. Hahn, La Capra Associates, Inc.

LOL filed its Direct Testimonies on September 28, 2007. Testimony was provided for one witness: Henry Curtis. HREA filed no direct testimony. HELCO filed its Rebuttal Testimonies on October 29, 2007.

On November 6, 2007, the commission held a prehearing conference in preparation for the evidentiary hearing scheduled to commence on November 26, 2007. At the prehearing conference, the commission approved HREA's oral motion to withdraw from the proceeding, which the commission thereafter confirmed in Order No. 23834, filed on November 15, 2007. Also, in Order No. 23834, the commission required HELCO, the Consumer Advocate and LOL to file by November 16, 2007, "their stipulation, including their agreed-upon list of witnesses that are scheduled to testify at the evidentiary hearing."

6.

Stipulation Between HELCO and the Consumer Advocate

On November 16, 2007, HELCO and the Consumer Advocate filed its Stipulation Regarding Hearing and Commission Approval ("Stipulation") in which they informed the commission that, to simplify and expedite this proceeding, and facilitate the development of integrated resource planning in the State, they do not request an evidentiary hearing, and they waive cross-examination of their respective witnesses and of LOL's witness (Henry Curtis).

With respect to LOL, HELCO explained:

This Stipulation is by and between [HELCO] and the Consumer Advocate only. [HELCO] and the Consumer Advocate included [LOL], the only other party in this proceeding, in settlement discussions and also attempted to speak with LOL regarding a stipulation, but were unable to ascertain LOL's position on either a stipulation or the need for an evidentiary hearing, including



those witnesses that would need to appear at such hearing. Accordingly, LOL is not a party to the Stipulation and [HELCO] and the Consumer Advocate are not aware at this time of whether LOL desires an evidentiary hearing, or what witnesses LOL may call . . . .

. . . . .

HELCO's letter, dated November 16, 2007, at 1-2.

In their Stipulation, HELCO and the Consumer Advocate agree that HELCO's IRP-3 and the Stipulation collectively meet HELCO's responsibilities under the IRP Framework, are consistent with the commission's goal of identifying a mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost, and should be approved by the commission.

The Stipulation contains certain agreements between HELCO and the Consumer Advocate. Among other things, HELCO and the Consumer Advocate agree that, HELCO will submit an initial evaluation report of its IRP-3 Plan and Action Plan no later than March 31, 2008, and a second evaluation report no later than March 31, 2010. They also agree that HELCO will submit a revised IRP Plan (i.e, IRP-4) and Action Plan no later than March 31, 2011, unless the commission approves a different date for the submission.

To ensure a measure of consistency in future IRP analyses and filings to the commission, HELCO and the Consumer Advocate agree that:

- for IRP-4, HELCO will perform a systematic assessment of the needs of its system, and will identify the resultant needs and objectives that should be met through the IRP;

- for IRP-4, HELCO will evaluate the feasibility of the retirement of its existing older generating units;
- HELCO will assess the cost-effectiveness of its DSM programs using its most appropriate avoided costs in conjunction with the filing of its next Annual Program Accomplishments and Surcharge Report, and also will assess the cost-effectiveness of its DSM programs in its IRP-3 evaluation reports. DSM program modifications, if warranted, will be addressed in conjunction with the filing of HELCO's next Annual Program Modification and Evaluation ("M&E") Report, or via a letter request to the Commission if a program modification is proposed to be implemented subsequent to the filing of a M&E Report;
- HELCO will file for Commission review and approval its proposed 2007 and 2008 program-by-program cumulative energy efficiency MWh and MW goals, and the associated impacts. For the energy efficiency DSM and load management program impacts for 2009 through 2026, HELCO will provide a Company program-by-program breakdown in its upcoming IRP-3 evaluation report;
- HELCO commits to work with its Advisory Group to enhance the approach by which the Company implements the IRP planning process as set forth in the IRP Framework, including refining its efforts to characterize and document the factors that are taken into consideration in the selection of the preferred plan;
- HELCO agrees to incorporate the Sustainable Energy actions into the development of IRP-4, and will continue to work with its Advisory Group on the Sustainability Strategy. Related progress reports will be included as an agenda item for future Advisory Group meetings, and HELCO will also report on its Sustainability Strategy efforts in its IRP-3 evaluation reports.

Evidentiary Hearing

Given HELCO and the Consumer Advocate's waiver of the evidentiary hearing and their apparent inability "to ascertain LOL's position on either a stipulation or the need for an evidentiary hearing, including those witnesses that would need to appear at such hearing," the commission, by letter dated November 19, 2007, instructed LOL to notify the commission in writing by November 20, 2007, 3:00 p.m., "as to whether LOL: (1) requests to proceed with the evidentiary hearing, and if so, the identity of the witnesses LOL seeks to cross-examine, and the relevance of these identified witnesses in relationship to LOL's pre-filed written testimony; or (2) waives the evidentiary hearing and cross-examination of any or all witnesses."<sup>12</sup> By reply letter dated and filed on November 20, 2007, LOL informed the commission that it sought to proceed with cross-examination of four witnesses: Norman Verbanic, Gary A. Hashiro, Arthur Seki, and Daniel Peaco.

The evidentiary hearing was held on Monday, November 26, 2007, in the commission's hearing room.

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<sup>12</sup>Commission letter, dated November 19, 2007, at 3 (footnote, citation, and text therein omitted).

LOL's Withdrawal

Following the evidentiary hearing, on December 14, 2007, LOL filed a Notice of Withdrawal. LOL's withdrawal as a party to the docket was approved by Order No. 23942, filed on December 28, 2007. Given LOL's withdrawal as a party, and HELCO and the Consumer Advocate's Stipulation, post-hearing briefing was made optional by the commission.

By letter dated and filed on December 31, 2007, HELCO notified the commission that HELCO and the Consumer Advocate would not be submitting any post-hearing briefs. They also requested that the commission approve HELCO's IRP-3 and the Stipulation.

## II.

Discussion

## A.

IRP Objectives

According to the IRP Framework, the "goal of integrated resource planning is the identification of the resources or the mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost."<sup>13</sup> The IRP Framework further states that "[t]he ultimate objective of a utility's [IRP] is meeting the

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<sup>13</sup>IRP Framework, Section II.A, at 3.

energy needs of the utility's customers over the ensuing 20 years."<sup>14</sup> "The utility may specify any other utility-specific objective that it seeks to achieve through its [IRP]. For example, given the parameter of the State goal of less dependence on imported oil, the utility may set as an objective the achievement of lowering to a specified level the use of imported oil."<sup>15</sup>

As part of the IRP process, HELCO developed objectives to be attained by the Preferred Plan, which were provided to the Advisory Group and the general public for comment between May and July 2004. The objectives identified by HELCO were as follows:<sup>16</sup>

- Consider Potential Societal and Cultural Impacts
- Economical Electricity (i.e., costs to the ratepayer)
- Energy Security (i.e., fuel diversification)
- Increase Plan Flexibility
- Power Quality and Reliability
- Protect the Environment (e.g., greenhouse gas emissions)
- Sustainable Future
- Utility Financial Integrity and Competitiveness

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<sup>14</sup>IRP Framework, Section IV.B.1, at 20.

<sup>15</sup>IRP Framework, Section IV.B.2, at 20. The commission may specify other objectives for the utility, but must include those objectives in the order opening the docket to commence the planning cycle. IRP Framework, Section IV.B.3, at 20.

<sup>16</sup>HELCO IRP-3, at ES-3.

In its Direct Testimonies, the Consumer Advocate articulated a concern over HELCO having "broadly defined the objectives of its IRP-3 to the point where it has obscured its focus on the core objective of ensuring that the plan results in a reasonable cost alternative to meeting consumer energy needs and thus results in a reasonable price to be charged by HELCO."<sup>17</sup> HELCO "has opportunities to offer better quantification of the core system objectives that would improve the planning process, while still providing for broad consideration of other important, but less quantifiable, issues."<sup>18</sup>

In their Stipulation, HELCO and the Consumer Advocate agree that "for IRP-4, HELCO will perform a systematic assessment of the needs of its system, and will identify the resultant needs and objectives that should be met through the IRP." Given the parties' Stipulation, and the broad latitude afforded the utility in identifying the utility-specific objectives that it seeks to achieve through its IRP,<sup>19</sup> the commission is satisfied with the objectives articulated by HELCO for this IRP. However, given the high cost of electricity,<sup>20</sup> HELCO should continue to consider how the objectives it identifies impact the overall cost of electricity to its customers.

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<sup>17</sup>CA-T-1, at 5.

<sup>18</sup>CA-T-1, at 5.

<sup>19</sup>IRP Framework, Section IV.B.2, at 20. The commission may specify other objectives for the utility, but must include those objectives in the order opening the docket to commence the planning cycle. IRP Framework, Section IV.B.3, at 20.

<sup>20</sup>CA-T-1, at 22-23, 33.

B.

IRP Process

"To maximize public participation in each utility's integrated resource planning process opportunities for such participation shall be provided through advisory groups to the utility, public hearings, and interventions in formal proceedings before the commission."<sup>21</sup>

With respect to advisory groups, the utility is required to organize representatives of public and private entities to advise the utility in development of its IRP.<sup>22</sup> The public and private entities should represent interests that are affected by the utility's IRP and can provide significant perspective or useful expertise in the development of the plan such as state and county agencies and environmental, cultural, business, and community interest groups.<sup>23</sup>

As for public hearings, the utility is encouraged under the IRP Framework to conduct public hearings or provide public forums at various, discrete phases of the planning process to secure input of those members of the public who are not represented by entities participating in the advisory groups.<sup>24</sup>

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<sup>21</sup>IRP Framework, Section III.E, at 13.

<sup>22</sup>IRP Framework, Section III.E.1.a, at 13.

<sup>23</sup>IRP Framework, Section III.E.1.b, at 13.

<sup>24</sup>IRP Framework, Section III.E.2.a, at 14.

Upon the filing of the IRP plan, the utility is required to publish in a newspaper of general circulation statewide, a notice informing the general public that the utility has filed its proposed IRP.<sup>25</sup> To encourage public awareness of the filings of the IRP plan, a copy of the plan and supporting analysis must be made available for public review at the commission's office, at the office of the commission's representative in the county serviced by the utility, and for HELCO, a public library in Kona.<sup>26</sup> The availability of the documents at the aforementioned locations should be included in the utility's published notice.

With respect to HELCO's IRP-3 process, it began with public and advisory group input into the development of objectives for the Preferred Plan through a number of informational meetings on the island of Hawaii. As part of the development of objectives, the detailed measures to be used to assess the attainment of the objectives were also determined. Subsequently, the primary data required for the analysis was developed, including the sales and peak forecasts, and DSM and supply-side resource characterizations. The supply-side resource characterizations were based on Unit Information Forms ("UIFs") that provide descriptions of specific generation units in the analysis. The UIFs provide cost information and qualitative technical and engineering characterizations as well as qualitative and quantitative environmental characterizations.

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<sup>25</sup>IRP Framework, Section III.E.3.a, at 14.

<sup>26</sup>IRP Framework, Section III.E.3.b, at 14.



Also included in the analysis were combined heat and power ("CHP") and distributed generation ("DG") resource assessments. All of the data were then used in integration analysis; the initial step of which was the development of plan concepts which were then used to define finalist plans to be analyzed as the possible Preferred Plan. The plans were analyzed using attribute analysis, rates and bills analysis and sensitivity and scenario analysis. Finally, the Preferred Plan was determined based on the integration analysis, as well as input from HELCO's Advisory Group and the public at public informational meetings held on the island of Hawaii.<sup>27</sup>

Specifically, public participation in the HELCO IRP-3 process included an Advisory Group made up of representatives from government agencies, the business community and environmental and cultural interest groups. The Advisory Group met periodically throughout the IRP process (17 meetings). In addition, HELCO held two sets of public informational meetings to obtain input from members of the public who were not represented by entities constituting the Advisory Group. The first set of public informational meetings was held in June 2004 to inform the public of the IRP process and obtain their input. The second set of public informational meetings was held in August 2006 to obtain public input into the selection of the Preferred Plan from among the finalist plans. To allow the public to follow the

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<sup>27</sup>HELCO T-10, at 4-5.

IRP process, HELCO set up an internet website and included information on the Advisory Group meeting schedules and meeting materials.<sup>28</sup>

Having reviewed the docket record, it appears that HELCO satisfied the IRP Framework requirements for public participation in the IRP process, and the level of public participation in HELCO's IRP-3 process was consistent with the IRP Framework.

### C.

#### Preferred Plan

Under the IRP Framework, the utility is required to submit its IRP as follows:

- a. The utility shall include in its [IRP] a full and detailed description of (1) the needs identified; (2) the forecasts made; (3) the assumptions underlying the forecasts; (4) the objectives to be attained by the plan; (5) the measures by which achievement of the objectives is to be assessed; (6) the resource options or mix of options included in the plan; (7) the assumptions and the basis of the assumptions underlying the plan; (8) the risks and uncertainties associated with the plan; (9) the revenue requirements on a present value basis and on an annual basis; (10) the expected impact of the plan on demand; (11) the expected achievement of objectives; (12) the potential impact of the plan on rates, consumer bills, and consumer energy use; (13) the plan's external costs and benefits; and (14) the relative sensitivity of the plan to changes in assumptions and other conditions. The items enumerated should, where appropriate, be described for the plan as a whole and for each of the resources or mix of resources included in the plan.

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<sup>28</sup>HELCO T-10, at 5-6.

- b. The utility shall file with the [IRP] a full and detailed description of the analysis or analyses upon which the plan is based. The utility shall fully describe, among other things, (1) the data (and the source of the data) upon which needs were identified and forecasts made; (2) the methodologies used in forecasting; (3) the various objectives and measures of assessing attainment of objectives that were considered, but rejected, and the reasons for rejecting any objective or measure; (4) the resource options that were identified, but screened out and not considered and the reasons for the rejection of any resource; (5) the assumptions and the basis of the assumptions, the risks and uncertainties, the costs, effectiveness, and benefits (including external costs and benefits), and the impacts on demand, rates, consumer bills, and consumer energy uses associated with each resource option or mix of options that was considered; (6) the comparisons and the cost, effectiveness, and benefit tradeoffs and optimization made of the options and mixes of options; (7) the models used in the comparisons, tradeoffs, and optimization; (8) the criteria used in any rankings of options and mixes of options; and (9) the sensitivity analyses conducted for the options and mixes of options.
- c. The utility shall also file with the [IRP] a description of all alternate plans that the utility developed, the ranking it accorded the various plans, the criteria used in such ranking, and a full and detailed explanation of the analysis upon which it decided its preferred [IRP].
- . . . . .

IRP Framework, Section III.D.1, at 9-10.

HELCO's Preferred Plan represents the plan, which in HELCO's view, best optimizes the mix of supply-side and demand-side resource options in a fashion that achieves a level of effectiveness or a level of benefits specified in the objectives. The Preferred Plan is the plan selected from all

other alternative plans, each of which represent optimization from a different perspective, whether it be costs to the ratepayer (economic electricity), fuel diversification (energy security), or greenhouse gas emissions (protection of the environment).<sup>29</sup>

The Preferred Plan includes:<sup>30</sup>

- 10.56 MW wind farm, Hawi Renewable Energy, March 2006<sup>31</sup>
- 20.5 MW wind farm, Pakini Nui Wind Project, March 2007
- 16 MW, Steam Turbine - Heat Recovery Unit (ST-7), 2009
- 22 MW of energy efficiency, conservation and other DSM programs
- 5.5 MW of CHP
- 37 GWh/yr renewable energy resources, 2014-2020
- 25 MW of firm renewable generation, 2022
- 856 GWh of customer-installed PV over 20 year planning period

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<sup>29</sup>HELCO IRP-3, at ES-3.

<sup>30</sup>HELCO IRP-3, at 11-8.

<sup>31</sup>The two wind farms are already built and are in service. HELCO RT-7, at 39-40. The Hawi Renewable Development ("HRD") and Pakini Nui wind farms were not evaluated in the IRP-3 integration process because HELCO already had legally enforceable obligations to purchase energy from these resources once they went into commercial operation. The purchase power agreement ("PPA") between HELCO and HRD was executed on December 30, 2003, and was approved by the commission on May 14, 2004, in Docket No. 04-0016. The HRD wind farm went into commercial operation on May 19, 2006. A PPA between HELCO and Pakini Nui (fka, Apollo Energy Corporation) was executed on October 13, 2004, and was approved by the commission on March 10, 2005, in Docket No. 04-0346. The Pakini Nui wind farm went into commercial operation on April 3, 2007. Id.

According to HELCO, the Preferred Plan complies with the commission's IRP Framework; it represents a reasonable course for meeting the energy needs of its customers; it is in the public interest and consistent with the goals and objectives of integrated resource planning; it identifies the resources or mix of resources for meeting near and long-term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost; it comports with state and county environmental, health, and safety laws and formally adopted state and county plans; it considers and analyzes the cost effectiveness and benefits of all appropriate, available, and feasible supply-side and demand-side options; it considers the plan's impacts upon the utility's consumers, the environment, culture, community lifestyles, the State of Hawaii's economy, and society; it takes into consideration the utility's financial integrity, size, and physical capability; it provided an opportunity for participation by the public and governmental agencies in the development of its integrated resource plan; and its findings and recommendations regarding the identification, quantification, and utilization of externalities are reasonable for comparisons between resource plans within the context of integrated resource planning.<sup>32</sup>

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<sup>32</sup>HELCO T-10, at 7-15.

1.

General Concerns

a.

Consumer Advocate

In its Direct Testimonies, the Consumer Advocate stated that HELCO's filing "generally" "does provide information in the areas required by the Commission's [IRP] Framework."<sup>33</sup> However, the Consumer Advocate noted areas where specific additional information would assist in review of the Preferred Plan and the Action Plan.<sup>34</sup> In addition, the Consumer Advocate was concerned that HELCO's "plan does not adequately focus on the overall cost of producing and delivering energy to meet HELCO's customers' energy needs and the resulting rate impacts associated with such costs on a going forward basis in light of the 50 percent increase in the average per kwh price of electricity since the filing of HELCO's IRP-2"<sup>35</sup>; and HELCO's "plan did not focus on the implications of potential regulation of greenhouse gases."<sup>36</sup>

With respect to the Consumer Advocate's concerns regarding the lack of focus on the overall cost of producing and delivering energy to meet HELCO's customers' energy needs and the resulting rate impacts associated with such costs, HELCO stated

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<sup>33</sup>CA-T-1, at 9.

<sup>34</sup>CA-T-1, at 9.

<sup>35</sup>CA-T-1, at 5.

<sup>36</sup>CA-T-1, at 5.

it "is very concerned about the cost of electricity" but "must balance the cost of its product with the quality of its product and the reliability of its system, the potential societal, cultural and environmental impacts of its activities and having secure and sustainable energy supplies," which all tend to increase cost.<sup>37</sup> To mitigate the rising cost of electricity, HELCO stated that it has proposed a number of measures, including the continuation of DSM programs and the Renewable Energy and Energy Efficiency Program for Affordable Housing ("REEEPAH"). In its 2006 rate case, HELCO also proposed a tiered rate structure for residential customers, time of use rates, and measures to cap energy rates for low income residential customers. HELCO states that it also minimizes costs in how it operates its system (e.g., it has a policy of optimizing (minimizing) production cost).<sup>38</sup>

In response to the Consumer Advocate's concern about the lack of focus on greenhouse gas regulation, HELCO stated in rebuttal that the issue would be more appropriately addressed in IRP-4 when the regulatory issues and potential actions related to greenhouse gas regulation are more well-defined.<sup>39</sup>

In their Stipulation, HELCO and the Consumer Advocate state that they agree that the IRP-3 Plan and the Stipulation "(1) sufficiently meet HELCO's responsibilities under

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<sup>37</sup>HELCO RT-1, at 21.

<sup>38</sup>HELCO RT-1, at 21-22.

<sup>39</sup>HELCO RT-1, at 22; HELCO RT-10.

Section II.C of the IRP Framework, (2) are consistent with the Commission's goal to identify a mix of resources for meeting near and long term consumer energy needs in an efficient and reliable manner at the lowest reasonable cost, and (3) should be approved by the Commission."<sup>40</sup> HELCO and the Consumer Advocate also agree that HELCO will include a resource-by-resource summary of costs in its future IRP reports, in response to the Consumer Advocate's suggestion that in future IRP proceedings HELCO should include a section that specifically describes the costs of various supply-side options.<sup>41</sup> HELCO and the Consumer Advocate also agree that HELCO should more fully examine the potential ramifications of greenhouse gas regulation, including any costs and risks to ratepayers in HELCO's IRP-4 process.<sup>42</sup>

b.

LOL's Concerns<sup>43</sup>

In its Direct Testimony, LOL appears to have had the following concerns with IRP-3: that IRP-3 underestimates the cost of oil; that HELCO "chooses not to discuss biofuels"; and that IRP-3 does not include "cost-competitive renewable energy

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<sup>40</sup>Stipulation at 5.

<sup>41</sup>Stipulation at 10.

<sup>42</sup>Stipulation at 9.

<sup>43</sup>While LOL has withdrawn from this proceeding, the commission discusses LOL's concerns, as LOL participated in the evidentiary hearing in this docket.



options," including energy conservation, energy efficiency, photovoltaic, wind, wave, ocean thermal energy conversion (OTEC) and sea water air conditioning (SWAC)."<sup>44</sup>

With respect to the cost of oil, HELCO states that there are significant uncertainties in the future cost of crude oil, which impact the cost of the fuel products utilized by HELCO. HELCO explains that it developed a correlation between its historical fuel prices and historical World Oil prices (as provided by the Energy Administration's Annual Energy Outlook) and applied the correlation factor to the AEO forecast to arrive at a forecast of HELCO's fuel prices. To deal with uncertainties, HELCO performed fuel price sensitivity analyses as part of its IRP-3 integration analysis and tested the sensitivity of the finalist plans to the NYMEX-based fuel price forecast that was developed by the Advisory Group.<sup>45</sup>

With respect to biofuels, HELCO states that HECO and Maui Electric Company, Ltd ("MECO")<sup>46</sup> are involved in a variety of ongoing and planned research activities intended to position the companies for the accelerated utilization of biofuels, including supporting research on biofuel crop production in Hawaii, testing of biofuels in generating units and fleet vehicles, and

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<sup>44</sup>According to LOL, "energy conservation and efficiency should always be considered first, renewable energy resources should be considered next: OTEC and SWAC for baseload power, a combination of wave energy systems, solar photovoltaic, and wind as intermittent sources of energy."

<sup>45</sup>HELCO RT-1, at 14-15; HELCO RT-7, at 34-35.

<sup>46</sup>HECO, HELCO and MECO are collectively referred to as the "HECO Companies."

procurement of biofuel feedstocks from sources outside Hawaii. HELCO states that in conjunction with HECO and MECO it will continue to evaluate using biofuels in existing and new units. Depending on the results of MECO's pilot test of biofuels, HELCO will work with HECO to develop and issue a solicitation of interest for biofuels and evaluate responses.<sup>47</sup>

Regarding LOL's concern over "cost-competitive renewable energy options," HELCO states in rebuttal that IRP-3 "already contains energy conservation, energy efficiency and photovoltaic resources" and that "with respect to wind and wave resources, which are as-available in nature, HELCO has indicated in its Preferred Plan that a 37 GWh renewable energy resource would be acquired in the 2014 and 2020 timeframe. As HELCO indicated in its response to CA-IR-30, the resource to be acquired in that timeframe could be the outcome of currently on-going negotiations with [independent power producers ("IPP")] who are currently exempt from the competitive bidding framework or of a future Request for Proposal ('RFP'). The renewable resource resulting from these IPP negotiations or RFP could possibly be either a wind resource or a wave energy resource."<sup>48</sup> In addition, according to HELCO, LOL "did not provide any information to be able to prepare a meaningful assessment of the ability of OTEC and SWAC resources to meet HELCO's customers' needs for capacity and energy in a

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<sup>47</sup>HELCO RT-1, at 19.

<sup>48</sup>HELCO RT-7, at 38.

timely manner. In an information request, HELCO asked LOL to describe its proposed long term resource plan to meet the forecasted power and energy needs of HELCO's customers and to describe the resources, the timing of the addition of each resource and the size of the resources in MW; but LOL did not respond to the information request. As there "is no indication that OTEC or SWAC are economically viable resources on the Big Island at this time" HELCO found "no basis to include these resources in the Preferred Plan."<sup>49</sup>

In their Stipulation, HELCO and the Consumer Advocate agree that HELCO will continue to evaluate using biofuels in existing and new units and that depending on the results of MECO's pilot test of biofuels, HELCO will work with HECO to develop and issue a solicitation of interest for biofuels and evaluate responses from a cost, efficiency, emissions and equipment impact perspective. HELCO and the Consumer Advocate also agree that HELCO will examine means of improving the performance of its existing generating units to help minimize production costs.<sup>50</sup> HELCO has also agreed, in connection with IRP-4, to perform a systematic assessment of the needs of its system, and the resultant needs and objectives that should be met through the IRP; and to evaluate the feasibility of the retirement of its existing older generating units.

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<sup>49</sup>HELCO RT-7, at 38-39.

<sup>50</sup>Stipulation at 9.

2.

Specific Concerns

a.

ST-7 Project

With respect to the specifics of the Preferred Plan, the Consumer Advocate expressed concern that "[t]he Preferred Plan does not explain or address the doubling of the estimated cost for the Keahole ST-7 project as compared to the estimated costs reflected in HELCO's IRP-2, or the economic justification for proceeding with that project at the current estimated project cost."<sup>51</sup>

The ST-7 Project is the steam cycle that would be added on to the existing Keahole simple cycle combustion turbine ("CT") units, CT-4 and CT-5, to create a dual train (also called two-on-one) combined cycle ("DTCC") unit. The major equipment to be added as a part of the ST-7 Project would include two Heat Recovery Steam Generators ("HSRGs"), where one would take the exhaust heat from CT-4 and the other would take the exhaust heat from CT-5 to generate steam; one steam turbine; and an air-cooled condenser. The ST-7 Project also includes the furnishing and installation of associated tanks, pumps, piping, valves, instruments, steam turbine building and electrical equipment as well as permitting, engineering, and construction services.<sup>52</sup>

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<sup>51</sup>CA-T-1, at 5.

<sup>52</sup>HELCO RT-7, at 2.

The ST-7 Project would add approximately 16 MW of generating capacity in West Hawaii at HELCO's existing Keahole Generating Station. The resulting combined cycle would operate as a baseloaded unit. There are currently no baseloaded generating units in West Hawaii.<sup>53</sup>

1)

#### History

According to HELCO, its efforts to install additional generation at Keahole began in 1991 when HELCO determined that there would be a need to install the next increment of new generating capacity after the installation of CT-3 at Puna.<sup>54</sup> HELCO planned to install two CTs and to complete a 58 MW DTCC generating unit at Keahole consisting of 1) two 20 MW simple cycle CTs (CT-4 and CT-5); 2) two HRSGs; 3) an 18 MW steam turbine generator ("STG") (ST-7); and 4) auxiliary equipment. HELCO's application to commit funds for CT-4 was the subject of Docket No. 7048, while the remaining CT, HSRGs and STG were the subject of Docket No. 7623.<sup>55</sup>

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<sup>53</sup>HELCO RT-7, at 2.

<sup>54</sup>HELCO-R-700, at 4.

<sup>55</sup>HELCO-R-700, at 1.

Based on HELCO's capacity planning criteria, it was initially determined that HELCO needed additional increments of capacity in 1994-1995 (20 MW), 1996 (20 MW) and 1997 (18 MW) due to forecast load growth and planned retirements of older generating units. The need for new generation was considered urgent as HELCO determined that CT-4 was needed in 1994.<sup>56</sup>

HELCO filed its application for CT-4 in July 1991, as amended in September 1992. By Decision and Order No. 13050, filed on January 21, 1994, in Docket No. 7048, the commission concluded that HELCO required additional capacity in West Hawaii in 1994-1995, that none of the parties disputed the need for the capacity and that "CT-4 is the only alternative with the possibility of fruition in the 1994-1995 time frame."<sup>57</sup> The commission also concluded that "it is prudent and reasonable for HELCO to include in the CT-4 project some of the costs needed to upgrade CT-4" for possible future incorporation of CT-4 into a 56 MW DTCC unit. "[T]he need for additional capacity on the Big Island is such that HELCO must continue parallel planning for additional generation in the event that non-utility generators do not deliver energy as promised." "Should it become necessary for HELCO to build CT-5, the provisions made in CT-4 for conversion will help expedite the installation of CT-5."

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<sup>56</sup>HELCO-R-700, at 4.

<sup>57</sup>HELCO-R-700, at 4.

According to HELCO, it initially determined that CT-5 would be needed in 1996 and that ST-7 would be needed in 2007, but that it had to accelerate the installation date of CT-5 to address delays experienced by Puna Geothermal Venture ("PGV") from 1991 to 1993 and uncertainty with the continued supply of power by Hamakua Sugar Company and Hilo Coast Processing Company.

On February 26, 1993, HELCO filed an application requesting commission approval to commit funds for purchase and installation of CT-5 and ST-7, pursuant to paragraph 2.3.g.2 of General Order No. 7.<sup>58</sup> HELCO planned to interconnect CT-5 and ST-7 with CT-4 to complete the 58 MW DTCC generating unit.<sup>59</sup> Two other parties to the docket, Waimana Enterprises Inc. (through Kawaihae Cogeneration Partners) ("Waimana/KCP") and

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<sup>58</sup>Under General Order No. 7, "the purpose of the submission is to enable the utility to receive commission determination, before it constructs or commits funds for the construction of the project, as to whether any portion of the proposed project provides facilities that are unnecessary or unreasonably in excess of probable future requirements for utility purposes. That portion found by the commission to be unnecessary or unreasonably in excess of the probable future requirements for utility purposes is excluded from the utility's rate base . . . . If a utility commits to expend funds for a capital project or even constructs the capital project without submitting the proposed expenditure for commission review, the utility takes the risk that all or portions of the capital project may be excluded from the rate base on the grounds that all or portions of the project are unnecessary or in excess of requirements for utility purposes. But, the failure to submit for commission review does not preclude the commission from allowing the inclusion of the project in the rate base. What the rule does is to provide the utility with an opportunity to secure prior commission determination of whether all or any portion of the proposed project would be includable in the utility's rate base." Decision and Order No. 14284, filed on September 22, 1995, in Docket No. 7623, at 15-16.

<sup>59</sup>Decision and Order No. 14284, filed on September 22, 1995, in Docket No. 7623, at 2.

Enserch Development Corporation ("Enserch"), were seeking to obtain power purchase agreements with HELCO. By Decision and Order No. 14284, filed on September 22, 1995, the commission approved HELCO's application on the condition that no part of the project may be included in HELCO's rate base until it is installed and used and useful for utility purposes. The parties agreed, and the commission concurred, that HELCO would require plant additions in the reasonably near future and that the proposed CT-5 and ST-7 were the appropriate type and size generating units for HELCO to meet its probable future requirements; but the parties disagreed when the future additions would be needed and the ability of HELCO to install CT-5 and ST-7 within the time frame contemplated by HELCO, given difficulties faced by HELCO in securing a conservation district use permit from the Board of Land and Natural Resources ("BLNR") to site its facilities at Keahole, and the need to secure a covered source air permit from the State Department of Health ("DOH").<sup>60</sup> The commission also recognized that both Waimana/KCP and Enserch had difficulties to overcome in securing a power purchase agreement. As such, the commission found that:

Given this state of affairs, the prudent course of action is to accept as the next generating unit that which can be most expeditiously put in place, whether by HELCO, Enserch, Waimana/KCP, or any other person. Thus, in this docket, we will continue to leave open the option of HELCO obtaining additional generation through its own facility. We will allow HELCO to continue to pursue construction of its own facility and to

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<sup>60</sup>Decision and Order No. 14284, filed on September 22, 1995, in Docket No. 7623, at 6-7, 10-12.



commit funds for such purpose, except as reserved in part D below [related to commitment of funds for CT-5]. This authorization is subject to the condition that HELCO, in parallel with its efforts to construct its own facility, negotiate in good faith with Enserch, Waimana/KCP, and any other party that may propose a power purchase contract, to the end that the generating unit that can be most expeditiously put into service at allowable cost, whether constructed by HELCO, Enserch, Waimana/KCP, or any other person, will constitute the next unit to be added to HELCO's system. The costs of pursuing HELCO's own generating unit will be allowed in HELCO's rate base only if HELCO's unit in fact becomes the next generating unit.<sup>61</sup>

In response to the commission's directives and in parallel with its efforts to expeditiously add new generation at Keahole, HELCO engaged in negotiations with Waimana/KCP and Enserch and was ultimately able to reach an agreement with Enserch (i.e., its project affiliate Encogen) in June 1997 (after HELCO obtained its land use approvals to use the Keahole site). In early 1997, HELCO determined that it would be prudent to proceed with installing CT-4 and CT-5 at Keahole while also entering into a PPA with Encogen. This parallel plan allowed HELCO to 1) increase its opportunity to install generation as soon as possible; 2) address the possibility that the Encogen facility or HELCO's Keahole additions might be further delayed; 3) meet the continuing need for generation after

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<sup>61</sup>Decision and Order No. 14284, filed on September 22, 1995, in Docket No. 7623, at 13. In a subsequent order, the commission reiterated that it "did not establish criteria for the selection of the next generating unit. Rather, we simply stated that which is obvious - that is, it is that unit that is most expeditiously put into service at allowable cost that will be the next generating unit added to HELCO's system." Order No. 16375, filed on June 9, 1998, in Docket No. 7956.

the "next" increment of generation was added to HELCO's system; 4) add generation in West Hawaii given the imbalance between the load in West Hawaii and the small amount of generating capacity in the region; and 5) obtain the benefits from HELCO's planned unit additions at Keahole for which most of the expenditures had already been incurred.<sup>62</sup> At the same time, to reduce the rate impact, HELCO deferred the planned installation of ST-7, and planned to put some of its own capacity on cold standby reserve status until additional generation was needed.

The installations of CT-4 and CT-5 were significantly delayed as a result of delays in obtaining certain approvals and to numerous lawsuits and administrative proceedings. On or about November 2003, a settlement agreement was reached between HELCO, Keahole Defense Coalition, Peggy Ratliff, Mahi Cooper, Hawaii Department of Hawaiian Homelands, DOH, BLNR and Department of Land and Natural Resources ("DLNR") whereby HELCO would be permitted to proceed with installing CT-4 and CT-5, and in the future, ST-7, subject to certain conditions. HELCO agreed to undertake a number of actions to mitigate the impact of the power plant in terms of air pollution, noise mitigation, and potable water and aesthetic concerns, which included expediting efforts to obtain the permits and approvals necessary to install

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<sup>62</sup>HELCO-R-700, at 7; HELCO RT-7, at 4.

ST-7 with selective catalytic reduction ("SCR") emission control equipment.<sup>63</sup> According to HELCO, expedited installation of ST-7 was also required by the Land Use Commission ("LUC") in Docket No. A03-743.<sup>64</sup>

CT-4 became commercially available on May 25, 1994 and CT-5 became commercially available on June 30, 2004. ST-7 is on track to be in service in 2009.<sup>65</sup>

In August 2006, HELCO awarded the engineering, construction management and start-up services contract for ST-7 to Black & Veatch. Certain facilities have been constructed, purchase orders for all of the major equipment required for ST-7 have been issued, and detailed design of ST-7 is ongoing.<sup>66</sup> Through September 30, 2007, HELCO's actual expenditures for the ST-7 Project were \$6,979,730. HELCO has made about \$31.3 million in commitments for the ST-7 Project, which includes about \$24 million in material and equipment commitments and \$7.3 million in outside services contracts for engineering, construction management, start-up services and field erected tank contracts. HELCO estimates that it would cost "millions" to cancel the contracts at this point.<sup>67</sup>

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<sup>63</sup>HELCO-R-700, at 11.

<sup>64</sup>HELCO-R-700, at 13.

<sup>65</sup>HELCO-R-700, at 13.

<sup>66</sup>HELCO-RT-7A, at 2-3.

<sup>67</sup>HELCO RT-7A, at 3.

2)

Cost

The estimated total cost of the ST-7 Project is \$92,391,000 based on a commercial operation date of July 2009. The cost of the ST-7 Project used in the HELCO IRP-3 integration analysis was \$57.035 million in 2004 dollars.<sup>68</sup> In its Rebuttal Testimonies, HELCO reaffirms that its current total cost estimate for ST-7 is \$92.4 million based on a July 2009 commercial operation date, which includes actual expenditures of \$6,979,730 incurred through September 30, 2007. The current cost estimate for ST-7 of \$92.4 million is compared to the \$38.6 million cost estimate in Decision and Order No. 14284 (for a 1997 commercial operation of ST-7) in HELCO-R-7A01.<sup>69</sup>

HELCO explains the higher cost estimate as being attributable to: 1) normal cost escalation, since ST-7 is being purchased and installed for a 2009 commercial operation date rather than a 1997 commercial operation date; 2) higher construction costs reflective of the Hawaii construction market; 3) higher equipment and material costs; 4) the additional requirements mandated for ST-7 that were not required when the cost estimate for 1997 was prepared (e.g., additional costs for

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<sup>68</sup>HELCO RT-7, at 20.

<sup>69</sup>HELCO RT-7A, at 5.

installation of an SCR and associated ammonia system and additional noise mitigation as required by the Keahole Settlement Agreement); and 5) higher engineering and services costs.<sup>70</sup>

In addition, according to HELCO, there does not appear to be an economic advantage to deferring the installation of ST-7. In the reference scenario (installation in 2014 rather than in 2009), less efficient generation must be run to meet customers' energy needs; and there are higher transmission losses because more energy must be transported from east to west in the absence of ST-7. While the revenue requirements for ST-7 capital are not incurred, this is partially offset by lower fuel costs of the more efficient ST-7 generation. Over the 20-year planning period, the savings in fuel costs are sufficiently large to offset the revenue requirements for ST-7 capital. Over the 50-year study period, the total revenue requirements for installing ST-7 in 2009 are less than installing ST-7 in 2014.<sup>71</sup>

According to HELCO, there are also risks to deferring ST-7, which include:

- 1) HELCO may be in violation of the Keahole Settlement Agreement;
- 2) HELCO already has a valid air permit covering the ST-7 unit. If HELCO defers installation of ST-7 from 2009 to 2014, "the air permit may expire unless HELCO seeks and is granted an extension of the permit." (It took HELCO nine years to obtain the air permit for CT-4/CT-5 and ST-7).

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<sup>70</sup>HELCO-RT-7A, at 5-9.

<sup>71</sup>HELCO RT-7, at 24.

- 3) HELCO would have to cancel current equipment procurement contracts, which would cost millions of dollars.
- 4) The total project cost would be higher because of escalation, cancellation costs, restarting costs for engineering, and storage costs for equipment that may already have been manufactured for this project.
- 5) If loads exceed the forecast, HELCO may not be able to accelerate the installation because of the long lead time needed to obtain any permits which may have expired, procure long lead time equipment, and construct the facility. As a result, there may be a higher risk of outages due to reserve capacity shortfalls.
- 6) HELCO would experience a higher risk of outages due to lower generating system and transmission system reliability for the period when ST-7 is not installed.
- 7) HELCO will incur higher operating costs during the period that ST-7 is not installed because of lower fuel efficiency and higher transmission system losses.
- 8) As load growth continues, it will become increasingly difficult to take the 6800, 7200, or 7300 transmission lines out of service to facilitate reconductoring projects with the existing generation available at Keahole.<sup>72</sup>

3)

#### Justification

According to HELCO, the expedited installation of ST-7 is required by the Keahole Settlement Agreement that allowed HELCO to complete the installation of generation (including CT-4 and CT-5) at Keahole and is consistent with directives of the LUC.<sup>73</sup>

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<sup>72</sup>HELCO RT-7, at 25-26.

<sup>73</sup>HELCO RT-7, at 7

In addition, the installation of ST-7 will:

- Not Require Additional Fuel Oil. The ST-7 unit will complete the DTCC facility at Keahole by adding a steam turbine generator that will run on waste heat from the CT-4 and CT-5 units without the need for additional fuel to provide additional energy and capacity.<sup>74</sup>
- Provide Generating System Reliability. ST-7 will provide additional firm capacity to increase HELCO's reserve margin<sup>75</sup> and reduce the need to rely on older, less reliable generating units. HELCO-R-701 shows HELCO's reserve margins with and without ST-7. ST-7 will also help provide a reserve margin cushion if PGV experiences future long-term problems with its supply wells, as it has in previous years.<sup>76</sup>
- Reduce the Need for New Transmission Lines. ST-7 will help to reduce the need to install an additional cross-island transmission line to carry power from East Hawaii, where most of the generating resources are located, to West Hawaii, where about one-half of the electrical power on the island is consumed.<sup>77</sup>
- Provide Transmission System Reliability. ST-7 will help to mitigate potential transmission line overloads in the event of outages of certain transmission lines. As noted above, it will also mitigate the need to install additional transmission capacity from the east to the west side of the island; and will provide voltage support in the provision of energy on the west side of the island.<sup>78</sup> Baseloaded generation in the form of the Keahole combined cycle unit is needed on the west side of the island to mitigate transmission line

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<sup>74</sup>HELCO RT-7, at 8.

<sup>75</sup>Reserve margin is the amount of reserve capacity on the system over and above the system peak. Reserve margin may be expressed in MW or as a percentage of the system peak (e.g., if the system peak demand is 200 MW and the total installed capacity is 240 MW, the reserve margin is 40 MW or 20%). HELCO RT-7, at 14.

<sup>76</sup>HELCO RT-7, at 9.

<sup>77</sup>HELCO RT-7, at 9-10.

<sup>78</sup>HELCO RT-7, at 8, 10.

overloads on the Keamuku to Keahole line (6800 line), the Waimea to Keamuku line (7200 line) or the Waimea to Ouli line (7300 line) in the event of an outage of any of these lines and to help with voltage support in the provision of energy on the west side of the island.<sup>79</sup>

- Improve Fuel Efficiency. Conversion of simple cycle units to combined cycle units increases system fuel efficiency since the steam cycle in the combined cycle utilizes energy in the combustion turbine exhaust that would otherwise be unused.<sup>80</sup>
- Reduce Fuel Use and Costs. The Keahole combined cycle will be the most efficient HELCO unit on the system so the operation of less efficient HELCO units will be displaced, thereby reducing overall fuel consumption and reducing fossil fuel imports into the State.<sup>81</sup>
- Reduce Emissions. Because of increased fuel efficiency, emissions will be reduced. Emissions of carbon dioxide, particulate matter under 10 microns, nitrogen oxides, and sulfur oxides all decrease in 2009 with the addition of ST-7 even though demand is increasing.<sup>82</sup>

Moreover, as noted above, there is an economic advantage to installing ST-7 in 2009 rather than 2014.

In its Direct Testimonies, the Consumer Advocate questioned whether HELCO's Plan 2, the Maximum Renewable Energy Plan, would improve if ST-7 were removed.<sup>83</sup> In its Rebuttal Testimonies, HELCO responded that "because of its location at Keahole, ST-7 will help mitigate overloads on certain transmission lines, help provide voltage support on the west side of the island, and reduce transmission system line losses.

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<sup>79</sup>HELCO RT-7, at 10-11.

<sup>80</sup>HELCO RT-7, at 13.

<sup>81</sup>HELCO RT-7, at 13-14.

<sup>82</sup>HELCO RT-7, at 14.

<sup>83</sup>CA-T-1, at 47.



Any alternative capacity to ST-7 would need to be located in the Keahole area to provide similar system benefits. Currently, there are no alternative capacity options that would provide firm, dispatchable capacity at or near Keahole." According to HELCO:

ST-7 will be an economically dispatchable resource capable of load-following and providing frequency and voltage regulation. Any alternative capacity to ST-7 would also need to possess these capabilities to help maintain a reliable grid. Future firm capacity renewable supply-side options include geothermal, waste-to-energy, biomass generation, or pumped storage hydroelectric ("PSH") generation coupled with wind generation. It is not clear to what extent these resources would be capable of providing these capabilities. For example, the existing geothermal generating facility does not have load-following capability and does not help regulate system frequency. A waste-to-energy facility may not have load-following or frequency regulation capability as its operation will be determined primarily by the flow rate of the waste stream. At this time, it is not certain whether or not PSH can help offset the moment to moment fluctuations of wind farm output.<sup>84</sup>

Notwithstanding these factors, HELCO reevaluated the Maximum Renewable Energy Plan by comparing the cost of the plan with and without ST-7. HELCO concluded that the plan with ST-7 is lower in total resource cost than the plan without ST-7 in the 20-year planning period and 50-year study period, and as such, that it is economically advantageous to have ST-7 in the Maximum Renewable Energy Plan.<sup>85</sup>

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<sup>84</sup>HELCO RT-7, at 29.

<sup>85</sup>HELCO RT-7, at 31.

In addition, in its Direct Testimonies, the Consumer Advocate stated that HELCO should include information in its Rebuttal Testimonies on the implication for the reserve requirements under its Generation Addition rule in cases with and without ST-7.<sup>86</sup> HELCO performed some calculations, which are contained in HELCO-R-701.<sup>87</sup>

In sum, it is HELCO's position that ST-7 in 2009 is fully justified, given that ST-7 is required to be expeditiously installed by the Keahole Settlement Agreement and the LUC, that ST-7 would provide generating system and transmission system reliability, fuel efficiency and emission reduction benefits, and the economic advantage of installing ST-7 in 2009 rather than in 2014.<sup>88</sup>

4)

#### Stipulation

In their Stipulation, HELCO and the Consumer Advocate agree that the subject of cost recovery for ST-7 should be addressed in the rate case proceeding in which HELCO requests recovery of the ST-7 Project costs. Any issue as to whether the cost of the ST-7 Project is reasonable and may be included in

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<sup>86</sup>CA-T-1, at 48.

<sup>87</sup>HELCO RT-7, at 19. HELCO states that it was not able to determine reserve requirements under Rule 1 of its capacity planning criteria because of the extensive analysis required to account for loads, capacity, planned maintenance schedules and loss of largest unit.

<sup>88</sup>HELCO RT-7, at 28.

rate base for ratemaking purposes has been reserved to, and may be raised in, the next general rate proceeding (or other proceeding) in which HELCO requests recovery of the ST-7 Project costs. HELCO has the burden of demonstrating that the costs for the ST-7 Project are reasonable. To meet its burden of producing evidence that it prudently managed the project, HELCO agrees to include in its cost report for the project the reasonable steps it took to minimize the remaining costs of the project. HELCO and the Consumer Advocate agree that HELCO shall submit in its quarterly capital project status report, the current capital cost estimate for the expected service date of, and status of the ST-7 Project, explain the basis for any material variances (i.e., \$2 million) in the current cost estimate from the \$92.4 million estimate provided in this docket, and provide support, to the extent available, for the revised estimate.<sup>89</sup>

From the commission's perspective, HELCO and the Consumer Advocate's agreements on ST-7 are a reasonable means of resolving their disputes. While the commission is very concerned about the increased costs of ST-7, and the impact on HELCO's ratepayers, it is persuaded by the history of ST-7 and HELCO's justifications for inclusion of ST-7 in HELCO's Preferred Plan and Action Plan. In particular, the commission is persuaded by the fact that ST-7 will not require additional fuel oil, and will provide generating system and transmission system reliability, as well as improve fuel efficiency and

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<sup>89</sup>Stipulation at 6-7.

reduce emissions. Notably, ST-7 has been planned for a number of years and HELCO has been proceeding toward construction (e.g., in August 2006, HELCO awarded the engineering, construction management and start-up services contract for ST-7 to Black & Veatch; certain facilities have been constructed, purchase orders for all of the major equipment required for ST-7 have been issued, and detailed design of ST-7 is ongoing). In addition, the cost issues raised by the Consumer Advocate are addressed by the Stipulation through deferral of cost recovery for ST-7 to HELCO's next rate case proceeding in which HELCO requests recovery of the ST-7 Project costs.

b.

#### Transmission Improvements

Another issue raised by the Consumer Advocate in its testimonies pertains to transmission improvements. According to HELCO, three of its transmission lines are not in compliance with HELCO's Transmission Planning Criteria for line loading; the 7300 (Waimea-Ouli), 7200 (Waimea-Keamuku) and 6800 (Keamuku-Keahole) transmission lines<sup>90</sup> are at risk of exceeding their emergency

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<sup>90</sup>According to HELCO, the reconductoring of the 7300 transmission line received interim approval by Interim Order No. 23544, filed on July 13, 2007, in Docket No. 2007-0124, and construction activities are underway. The reconductoring/rebuilding of the 7200 line is currently scheduled to begin in 2008, and HELCO anticipates filing an application for approval to commit funds by the end of 2007. The reconductoring/rebuilding of the 6800 line is subject to further study. HELCO RT-8, at 4.

rating. The 7300 transmission line is also approaching its normal rating under economic dispatch. To address these conditions, HELCO is planning to reconductor these lines.<sup>91</sup>

The transmission line rebuild projects are not listed in the Preferred Plan, but are included in the Action Plan. The Consumer Advocate asserted in Direct Testimonies that they should have been included in the Preferred Plan since they "are integral to the overall plan to address the reliability of supply and the development of supply and demand resources in the Preferred Plan."<sup>92</sup>

In its Direct Testimonies, the Consumer Advocate stated that the transmission upgrades did not appear to have been the result of evaluating transmission and non-transmission alternatives through an integrated planning process such as IRP-3, as the proposed transmission upgrades were included in all of the plans that were evaluated by the integrated planning process used to prepare IRP-3.<sup>93</sup> The Consumer Advocate recommended that HELCO provide additional information on how it performed the technical assessments of the transmission system; and specific detail on the alternatives that were considered to the transmission upgrades, including an economic comparison.<sup>94</sup>

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<sup>91</sup>HELCO IRP-3, at 7-6, 12-6.

<sup>92</sup>CA-T-1, at 43 n.20.

<sup>93</sup>CA-T-2, at 20-21.

<sup>94</sup>CA-T-2, at 23.

In its Rebuttal Testimonies, HELCO stated that the need for the 7300 and 7200 line reconductor/rebuild projects was identified in the Waimea-Keamuku (7200) and Waimea-Ouli (7300) 69kV Transmission Line Overload Study ("Transmission Line Overload Study") completed in 2006.<sup>95</sup> The following options were considered as alternatives to the reconductor/rebuild of the 7300 and 7200 lines: (1) line re-rating; (2) uneconomic operation of West Hawaii generation; (3) installation of utility-sponsored CHP in West Hawaii; (4) installation of DG at HELCO-owned substations in West Hawaii; (5) reconductoring of both lines; and (6) build a new line. Each of these options was evaluated based on effectiveness, reliability, feasibility of implementation, and cost. Options 1 - 4 and 6 were eliminated due to ineffectiveness, uncertainty of level of impact, lack of timeliness, dependence on customer participation, and/or higher capital and operating costs. Option 5 was considered the most effective, timely, and cost-effective option for addressing the 7200 and 7300 line overload risks.<sup>96</sup>

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<sup>95</sup>HELCO RT-8, at 3. The executive summary of the Transmission Line Overload Study was filed as Exhibit 3 to HELCO's application filed on May 11, 2007, in Docket No. 2007-0124. A copy of the entire study was filed under a separate transmittal dated May 14, 2007 in the same docket. HELCO's application for the 7200 reconductor/rebuild project is scheduled to be filed with the commission at the end of 2007. The study for the 6800 line is in progress and scheduled for completion in early 2008. HELCO RT-8, at 1-2.

<sup>96</sup>HELCO RT-8, at 4-5.

In addition, according to HELCO, preliminary studies showed that the 6800 line is currently at risk for overload and low voltage conditions during certain contingencies.<sup>97</sup> A formal study would be required to determine if these constraints will be alleviated with the addition of the ST-7 Project along with the other assumptions in HELCO's current plan for generation additions and load growth on the HELCO system.<sup>98</sup> The options that will be considered in the 6800 line study will depend on the results of the load flow analysis; however, the study will consider the impact of the current plan for generation additions, including ST-7, and whether the addition of ST-7, as a base loaded unit, will alleviate the current overload and low voltage conditions of the 6800 line.<sup>99</sup>

In response to the Consumer Advocate's concern that HELCO did not appear to have based its decision to invest in transmission upgrades upon an evaluation of transmission and non-transmission alternatives in an integrated planning process such as IRP-3, HELCO stated:

- The addition of ST-7, in conjunction with CT-4 and CT-5 in combined-cycle mode and operated as a base loaded generation in 2009 will not eliminate the need for the 7200 and 7300 reconductor/rebuild projects. Thus, these reconditioning/rebuilding projects are required in each of the finalist plans that were developed.

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<sup>97</sup>HELCO RT-8, at 3.

<sup>98</sup>HELCO RT-8, at 3.

<sup>99</sup>HELCO RT-8, at 5.

- Further study is needed to determine if the addition of the ST-7 Project in 2009, along with other assumptions in HELCO's current plan for generation additions and load growth on the HELCO system, will alleviate the need for the reconductor/rebuild project. However, preliminary studies demonstrate that the 6800 line is currently at risk for overload and low voltage conditions during certain contingencies. Thus, the reconductor/rebuild of the 6800 line was included in each of the finalist plans.
- The 7200 and 7300 overload study and the 6800 overload study are and will be based on the current short-term load forecasts and incorporate the long-term IRP-3 forecast, both of which take into account the load reducing effects of CHP and DSM projects and programs. They also look at the current planned generation additions taking into account the current status of HELCO and IPP generation additions as well as the IRP-3 long-term plan.<sup>100</sup>

In their Stipulation, HELCO and the Consumer Advocate agree that HELCO will file an application for the commitment of funds for the 7200 line reconductoring/rebuild project at the end of 2007 and that the study for the 6800 line is in progress and scheduled for completion and filing with the commission in early 2008. In addition, the parties agree that HELCO will complete a study to determine if the addition of ST-7 in 2009 will sufficiently alleviate the need for, or permit deferral of, the 6800 line reconductoring/rebuild project. HELCO also agrees that it will not commit or expend any funds (over and above the study costs) on the 6800 line reconductoring/rebuild project until the Consumer Advocate has had sufficient opportunity to review and comment on this study, if the costs of the project are

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<sup>100</sup>HELCO RT-8, at 7-8.



expected to be less than \$2.5 million, and provided that the Consumer Advocate makes its best effort to complete its review and comments on this study within 60 days from the date of service of the study on the Consumer Advocate.<sup>101</sup>

From the commission's perspective, the parties' Stipulation on the transmission upgrades is reasonable and appropriate.

c.

#### DSM Programs

Included in HELCO's IRP-3 integration analysis were the following DSM programs:

- Enhancements to existing energy efficiency DSM programs:
  - Residential Efficient Water Heating Program ("REWH")
  - Commercial and Industrial Energy Efficiency Program ("CIEE")
  - Commercial and Industrial New Construction Program ("CINC")
  - Commercial and Industrial Customized Rebate Program ("CICR")

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<sup>101</sup>Stipulation at 7. If the 6800 line reconductoring/rebuild project is necessary to avoid potential degradation or disruption of service or other negative impacts to service reliability, HELCO shall have the ability to request a waiver of this requirement from the commission.

- New energy efficiency DSM programs:
  - Residential New Construction Program ("RNC")
  - Energy Solutions for the Home Program ("ESH")
  - Residential Qualifying Income Program ("RQI")
- New load control DSM programs:
  - Residential Direct Load Control Program ("RDLC")
  - Commercial and Industrial Load Management Program ("CILM")

Subsequent to the integration analysis, the commission issued Decision and Order No. 23258, filed on February 13, 2007 in Docket No. 05-0069 ("Energy Efficiency Docket"), in which the commission ordered that the HECO Companies' energy efficiency DSM programs would transition from the HECO Companies to the non-utility market structure (i.e., third party administrator), by January 2009, unless otherwise ordered by the commission. The HECO Companies' load management programs, however, are excluded from the third-party administrator's area of responsibility.

Due to these changes in the way DSM resources will be acquired in the future resulting from the decision and order, HELCO proposed for IRP-3 to continue its existing four DSM programs, with modifications (i.e., REWH, CIEE, CINC, and CICR), until the transition to the non-utility market structure

in 2009 is completed and to implement two new load management programs beginning in 2008 (i.e., RDLC and CILM), but not to pursue the full portfolio of DSM programs as developed for IRP-3 prior to the decision and order.<sup>102</sup>

In its Direct Testimonies, the Consumer Advocate articulated a concern that the avoided costs used for preliminary screening of DSM programs were taken from HELCO's IRP-2 and are much lower than what avoided forecasts would be if estimated at today's higher prices for fossil fuels, which "are key determinants of avoided costs."<sup>103</sup> According to the Consumer Advocate, "[w]hile it does not appear that a large amount of DSM potential savings were eliminated in the preliminary screening process because of the low avoided costs, the understatement of avoided costs creates a perception that the DSM programs are not very cost effective" and that "runs counter to analyses [the Consumer Advocate's consultant has] seen in other studies."<sup>104</sup> The Consumer Advocate recommended that HELCO prepare an updated forecast of avoided costs, and update the cost-effectiveness analysis utilized in the preliminary screening of DSM.<sup>105</sup>

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<sup>102</sup>HELCO IRP-3, at ES-10, ES-25, 5-4, and 10-6.

<sup>103</sup>CA-T-2, at 7.

<sup>104</sup>CA-T-2, at 8.

<sup>105</sup>CA-T-2, at 8.

In addition, the Consumer Advocate expressed concern over HELCO's proposal to forego implementation of the three new energy efficiency programs, i.e., RNC, ESH, and RQI, on the ground that the opportunity to implement cost effective energy efficiency measures would be lost if implementation of new DSM programs that were found to be desirable in the DSM potential study are not implemented as proposed in HELCO's IRP-3. The Consumer Advocate recommended that HELCO prepare a plan to continue to implement both existing and new programs until it can smoothly transfer responsibility for all energy efficiency programs to the third-party administrator, including budgets and savings estimates, for submittal to the commission as part of this proceeding.<sup>106</sup>

In its Rebuttal Testimonies, HELCO states that there is no reason to prepare a revised forecast of the avoided costs used for preliminary screening of DSM options or update the cost effectiveness tests, because no DSM programs and their associated potential savings analyzed in the preliminary screening process were eliminated based on the cost-effectiveness results using the estimated avoided costs.<sup>107</sup>

In addition, HELCO states that it should not be required to submit a plan for implementing the new energy efficiency programs until it can smoothly transfer responsibility for all energy efficiency programs to the third-party

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<sup>106</sup>CA-T-2, at 10-11.

<sup>107</sup>HELCO RT-3, at 3.

administrator. HELCO's position is that these programs should be implemented in the most efficient and cost effective manner possible considering the commission's recent directives.<sup>108</sup> HELCO asserts that in deciding to only continue its existing energy efficiency programs it took into consideration the commission's decision and order in the Energy Efficiency Docket and the "limited timeframe and feasibility of applying for [c]ommission approval of program applications and implementing new energy efficiency DSM programs prior to 2009."<sup>109</sup> HELCO represents that it would be impractical to develop and submit program applications, receive commission approval, and implement the new energy efficiency programs prior to the transition. According to HELCO, the implementation of new DSM programs would entail a "significant amount of work," including allocation of limited resources, and acquiring and training of additional personnel. Specifically, implementing new DSM programs would require: (1) developing (and approval by the commission of) new energy efficiency applications; (2) developing program informational materials; (3) providing customer education; (4) developing and implementing marketing plans and materials; (5) establishing trade ally partnerships; (6) developing alliances with community action program agencies; (7) developing and instituting internal processing, reporting, and accounting procedures; (8) increasing participant financing options as needed; and (9) familiarizing existing program participating contractors, developers,

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<sup>108</sup>HELCO RT-3, at 7.

<sup>109</sup>HELCO RT-3, at 8.

energy analysts, and others with any procedural changes. HELCO states that hiring, training, and retaining qualified staff to fill short-term (one- to two-year) positions would be especially difficult and impractical and that implementing new programs would make the transition of the energy efficiency DSM programs from the utility to the third-party administrator more difficult.<sup>110</sup>

In their Stipulation, HELCO and the Consumer Advocate agree that the new energy efficiency DSM programs shall not be implemented as a consequence of the commission's decision and order in the Energy Efficiency Docket.<sup>111</sup> The parties, however, do not explain the basis for their agreement or the rationale for the Consumer Advocate's change in position.

While the commission is very concerned that progress in implementation of energy efficiency DSM programs in the State not be hindered in any way by the transition to a non-utility market structure, it is cognizant of the additional work that would be involved in implementing new programs. Accordingly, after much consideration and a careful weighing of the available options, the commission will approve at this time HELCO's proposal to exclude the new energy efficiency DSM programs in its Preferred Plan. As noted in Decision and Order No. 23258, until

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<sup>110</sup>HELCO-RT-3, at 9-10.

<sup>111</sup>Stipulation at 10-11.

the third-party administrator is in place, the HECO Companies will continue to be responsible for overseeing their existing energy efficiency programs.

3.

Summary

In sum, the commission finds that the Preferred Plan represents a reasonable course for meeting the energy needs of HELCO's customers and is in the public interest and consistent with the goals and objectives of integrated resource planning. As noted by the Consumer Advocate, the Preferred Plan "which is distinct from the Action Plan, is a strategy or a guide to future decisions and action. A [c]ommission finding that a resource plan is reasonable is not a twenty-year prescription for specific actions and investments. Rather, it is a guideline against which the Action Plan and future decisions can be measured to assess whether the specific action item is consistent with a reasonable longer-term strategic direction."<sup>112</sup>

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<sup>112</sup>CA-T-1, at 13-14.

D.

Action Plan

Section III.D.2 of the IRP Framework requires the following of the utility's Action Plan:

- a. The utility shall include in the schedule by year: the program or phases of programs to be implemented in the year; the expected level of achievement of objectives; the expected size of the target group or level of penetration of any [DSM] program; the expected supply-side capacity addition; the expenditures, by cost categories and cost elements, required to be made by the utility to support implementation of each program or phase of a program.
- b. The utility shall file with its [Action Plan] a full and detailed description of the analysis upon which the schedule is based. The utility shall fully describe, among other things:
  - (1) The steps required to realize and implement the supply-side and demand-side resource programs included in the schedule.
  - (2) How the target groups were selected and how program penetration for [DSM] programs and the expected levels of effectiveness in achieving integrated resource planning objectives were derived.
  - (3) The expected annual effects of program implementation on the utility and its system, the ratepayers, the environment, public health and safety, cultural interests, the state economy, and society in general.
- c. The [Action Plan] shall also be accompanied by the utility's proposals on cost and revenue loss recovery and incentives, as appropriate.

IRP Framework, Section III.D.3, at 10-11.



The Action Plan details specific actions needed to be taken over the next five years to implement the Preferred Plan.<sup>113</sup> HELCO's Action Plan includes the following fourteen items:<sup>114</sup>

1. ST-7 - complete the installation of ST-7 in 2009
2. Kawaihae Fuel Terminal - continue with plans to install the Kawaihae fuel terminal/diesel tank
3. Transmission - continue with plans to meet transmission planning criteria including improvements to east-to-west transmission capabilities by rebuilding the 7300, 7200, and 6800 transmission lines or other alternatives which meet the planning criteria
4. DSM Programs - continue current DSM energy efficiency programs, until a transition to non-utility administrator is completed by January 2009, as ordered by the commission, and implement load management programs in 2008 or when approved by the commission
5. Wind Integration Study - evaluate integration into the grid and work to mitigate system reliability impacts of existing and future renewable energy resources, including wind
6. Ancillary Services and Storage Alternatives - investigate ancillary services capabilities and feasibility of pumped storage hydro and other energy storage alternatives
7. Renewable Project Developments - continue development of potential renewable energy projects
8. Competitive Bidding - implement Competitive Bidding Framework for new generation; evaluate RFP for new renewable resources; evaluate RFP for firm renewable DG units

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<sup>113</sup>HELCO IRP-3, at ES-27.

<sup>114</sup>HELCO IRP-3, at ES-28.

9. Biofuels in Existing and New Units Evaluation - evaluate using biofuels in existing and new units
10. Options for Biofuels Resources - develop options for obtaining biofuel resources
11. Emerging Renewables - facilitate development of emerging renewable energy technologies
12. Monitor PV, CHP and other DG activities, evaluate possibility of utility programs, and continue customer education
13. Monitor the County of Hawaii's effort to install a waste-to-energy project
14. Continue development of REEPAH

In their Stipulation, in addition to other agreements such as those related to the ST-7 Project and the transmission upgrades, HELCO and the Consumer Advocate agree that HELCO may file an appropriate application for commission approval of its REEPAH Program; that HELCO will continue follow-up activities for the Electronic Shock Absorber concept and discussions with the developer of an advanced sodium-sulfur battery and the Pacific International Center for High Technology Research ("PICHTR") on a proposed demonstration battery installation on the Big Island; and that HELCO will continue work on the DG study. They also agree that HELCO, in conjunction with HECO and MECO, will continue to evaluate using biofuels in existing and new units, and depending on the results from MECO's pilot test of biofuels, HELCO will work with HECO to develop and issue a solicitation of interest for biofuels and

evaluate responses from a cost, efficiency, emissions, and equipment impact perspective. HELCO and the Consumer Advocate also agree that HELCO will examine means of improving the performance of its existing generating plants to help minimize production costs; and that HELCO will provide its assessment of the results of 2007 negotiations with renewable and other project developers with which it is currently negotiating, and provide an assessment of the need to conduct a competitive solicitation for additional renewable energy projects as part of HELCO's IRP-3 evaluation report.

Here, having reviewed HELCO's Action Plan, the commission finds that it is consistent with Section III.D.2.a of the IRP Framework. As noted by HELCO, its Action Plan "is not intended to lay out a single course of action. Rather, it is meant to be a part of a process to continuously re-evaluate, re-assess, and modify the appropriate actions and measures that should be taken in response to changing circumstances."<sup>115</sup> Accordingly, as set forth in the IRP Framework, the Action Plan may be revised as a result of HELCO's annual evaluation or change in conditions, circumstances or assumptions.

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<sup>115</sup>HELCO IRP-3, at ES-28.

E.

PURPA

Sections 111(d)(12), 111(d)(13), and 112(b)(3)(A) of PURPA, as amended by the Energy Policy Act of 2005, require the commission to commence consideration of the following matters governing fuel diversity and fossil fuel generation efficiency:<sup>116</sup>

(12) FUEL SOURCES - Each electric utility shall develop a plan to minimize dependence on 1 fuel source and to ensure that the electric energy it sells to consumers is generated using a diverse range of fuels and technologies, including renewable technologies.

(13) FOSSIL FUEL GENERATION EFFICIENCY - Each electric utility shall develop and implement a 10-year plan to increase the efficiency of its fossil fuel generation.

16 U.S.C. § 2621(d)(12) - (13). See also 16 U.S.C. § 2622(b)(3)(A).

By letter dated August 10, 2006, the commission requested that HELCO and the Consumer Advocate provide their position, if any, on whether the commission should adopt, modify, or decline to adopt in whole or part, those standards, as well as any procedural comments and suggestions as to how the issues should be considered in this docket or in a separate proceeding.

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<sup>116</sup>Section 102(a) of PURPA states:

This chapter applies to each electric utility in any calendar year, and to each proceeding relating to each electric utility in such year, if the total sales of electric energy by such utility for purposes other than resale exceeded 500 million kilowatt-hours during any calendar year beginning after December 31, 1975, and before the immediately preceding calendar year.

By letter dated December 29, 2006, HELCO recommended that the commission decline to adopt the two federal standards. According to HELCO, "one size fits all federal standards are not the optimal method to achieve objectives such as energy efficiency and implementation of renewable resources. Rather, utility specific objectives that are developed and refined in periodic [IRP] processes are preferable."<sup>117</sup> HELCO asserts that "[i]n this manner, a utility's specific circumstances (such as its specific existing generation mix and opportunities to acquire renewable resources through mechanisms such as competitive bidding) and State requirements and policies (such as standards mandated in the Renewable Portfolio Standards law, policies established in HRS § 226-18, and goals and objectives mandated by the [c]ommission in the IRP Framework and in proceedings such as the pending Energy Efficiency Docket) can be taken into consideration."<sup>118</sup> In the Stipulation, the Consumer Advocate states that it concurs with HELCO's position that the commission decline to adopt the two standards.<sup>119</sup>

Upon review, the commission agrees with HELCO and the Consumer Advocate that adoption of the two federal standards on fuel diversity and fossil fuel generation efficiency is unnecessary. As pointed out by HELCO, the electric utilities are all involved in formal IRP processes where fuel diversity and

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<sup>117</sup>Letter dated and filed December 29, 2006, from Warren H. W. Lee, President, HELCO, to the commission, at 2.

<sup>118</sup>Id.

<sup>119</sup>Stipulation at 29.

fossil fuel generation efficiency are considered. Accordingly, for the reasons stated in HELCO's December 29, 2006 letter, the commission declines to adopt the federal standards on fuel diversity and fossil fuel generation efficiency.

F.

#### IRP-3 Evaluation Reports

Pursuant to Section III.D.3 of the IRP Framework, HELCO is required to file annual evaluation reports, which assess the continuing validity of the forecasts and assumptions upon which its IRP and Action Plan were made; and compares the anticipated plan objectives, effects, and expenditures with those actually attained, experienced or made. "Together with its annual evaluation report, HELCO shall submit a revised program implementation schedule by dropping the immediately preceding year from the schedule and including a new year. By doing so, the program implementation schedule will always reflect a five-year time span. As a result of its annual evaluation, HELCO may also revise or amend its IRP [and its program implementation schedule]." <sup>120</sup>

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<sup>120</sup>In re Hawaii Elec. Light Co., Inc., Docket No. 7259, Decision and Order No. 14708, filed May 29, 1996, at 43-44; see also IRP Framework, Section III.D.3 and III.D.4, at 12.

In their Stipulation, HELCO and the Consumer Advocate agree that HELCO will submit an initial evaluation report of its IRP-3 Plan and Action Plan no later than March 31, 2009 and a second evaluation report no later than March 31, 2010.<sup>121</sup> These time frames are acceptable to the commission.

G.

IRP-4

Under Section III.B.2 of the IRP Framework, each utility shall conduct a major review of its IRP every three years. Section III.B.2 states:

Each utility shall conduct a major review of its integrated resource plan every three years. In such a review, a new 20-year time horizon shall be adopted, the planning process repeated, and the utility's resource programs re-analyzed fully. The first major review, following the submission of each utility's integrated resource plan to the commission in 1993, shall commence in 1995 so as to result in the submission to the commission of a new (second) integrated resource plan and implementation schedule in 1996 as follows . . . . Thereafter, each utility shall conduct a major review, resulting in the submission to the commission of a new integrated resource plan and implementation schedule on the same day every three years.

As IRP-3 was filed in May 2007, IRP-4 should be filed in May 2010. In their Stipulation, however, HELCO and the Consumer Advocate agree that HELCO will submit a revised IRP Plan and Action Plan no later than March 31, 2011, unless the

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<sup>121</sup>Stipulation at 5.

commission sets a different date for the submission.<sup>122</sup>

"[T]o streamline the process to develop HELCO's IRP-4 Plan and Action Plan, HELCO will use its current IRP-3 Plan and Action Plan as the base reference plans to commence the 4<sup>th</sup> IRP cycle, and the information to be provided in its March 31, 2009 and March 31, 2010 evaluation reports will also be considered in developing IRP-4."<sup>123</sup>

Given the number of extension requests for filing of IRP plans that the commission typically receives, the commission declines to accept the March 31, 2011 date stipulated to by the parties and will instead set a deadline of May 31, 2010, for HELCO's filing of IRP-4.

With respect to the substance of IRP-4, in its Direct Testimonies, the Consumer Advocate recommended that HELCO develop its IRP-4 to comprehensively assess the potential cost implications of greenhouse gas emissions on its plans.<sup>124</sup> In their Stipulation, HELCO and the Consumer Advocate agreed that HELCO should more fully examine the potential ramifications of greenhouse gas regulation, including any costs and risks to ratepayers in HELCO's IRP-4 process.<sup>125</sup>

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<sup>122</sup> Stipulation at 10.

<sup>123</sup> Id.

<sup>124</sup> CA-T-1, at 7.

<sup>125</sup> Stipulation at 9.



To ensure a measure of consistency in future IRP analyses and filings to the commission, HELCO and the Consumer Advocate also agreed in the Stipulation that:

- for IRP-4, HELCO will perform a systematic assessment of the needs of its system, and will identify the resultant needs and objectives that should be met through the IRP;
- for IRP-4, HELCO will evaluate the feasibility of the retirement of its existing older generating units;
- HELCO will assess the cost-effectiveness of its DSM programs using its most appropriate avoided costs in conjunction with the filing of its next Annual Program Accomplishments and Surcharge Report, and also will assess the cost-effectiveness of its DSM programs in its IRP-3 evaluation reports. DSM program modifications, if warranted, will be addressed in conjunction with the filing of HELCO's next M&E Report, or via a letter request to the Commission if a program modification is proposed to be implemented subsequent to the filing of a M&E Report;
- HELCO will file for Commission review and approval its proposed 2007 and 2008 program-by-program cumulative energy efficiency MWh and MW goals, and the associated impacts. For the energy efficiency DSM and load management program impacts for 2009 through 2026, HELCO will provide a Company program-by-program breakdown in its upcoming IRP-3 evaluation report;
- HELCO commits to work with its Advisory Group to enhance the approach by which the Company implements the IRP planning process as set forth in the IRP Framework, including refining its efforts to characterize and document the factors that are taken into consideration in the selection of the preferred plan;
- HELCO agrees to incorporate the Sustainable Energy actions into the development of IRP-4, and will continue to work with its Advisory Group on the Sustainability Strategy. Related progress reports will be included as an agenda item for future Advisory Group meetings, and HELCO will also report on its Sustainability Strategy efforts in its IRP-3 evaluation reports.<sup>126</sup>

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<sup>126</sup>Stipulation at 11-12.

HELCO also agreed to include a resource-by-resource summary of the costs in its future IRP reports.<sup>127</sup>

These items that HELCO and the Consumer Advocate have agreed to include in IRP-4 should improve the IRP-4 process. Accordingly, the commission commends HELCO and the Consumer Advocate on their agreements as set forth in the Stipulation, and approves the inclusion of these items in IRP-4.

### III.

#### Orders

##### THE COMMISSION ORDERS:

1. HELCO's IRP-3 Plan and Action Plan; and HELCO and the Consumer Advocate "Stipulation Regarding Hearing and Commission Approval" dated November 16, 2007, are approved.

2. HELCO shall file an initial evaluation report of its IRP-3 Plan and Action Plan no later than March 31, 2009, and a second evaluation report no later than March 31, 2010.

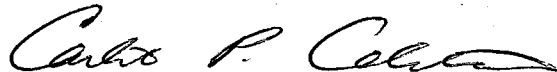
3. HELCO shall file its IRP-4 no later than May 31, 2010.

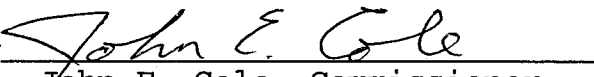
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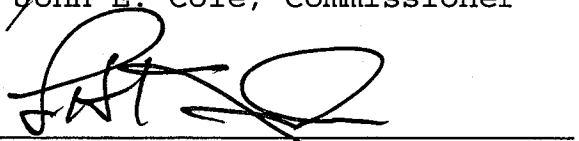
<sup>127</sup>Stipulation at 10.

DONE at Honolulu, Hawaii JAN 24 2008.


PUBLIC UTILITIES COMMISSION  
OF THE STATE OF HAWAII

By   
Carlito P. Caliboso, Chairman

By   
John E. Cole, Commissioner

By   
Leslie H. Kondo, Commissioner

APPROVED AS TO FORM:

  
Stacey Kawasaki Djou  
Commission Counsel

04-0046.1aa

CERTIFICATE OF SERVICE

I hereby certify that I have this date served a copy of the foregoing Decision and Order No. 23977 upon the following parties, by causing a copy hereof to be mailed, postage prepaid, and properly addressed to each such party.

CATHERINE P. AWAKUNI  
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DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS  
DIVISION OF CONSUMER ADVOCACY  
P. O. Box 541  
Honolulu, HI 96809

WARREN H. W. LEE  
PRESIDENT  
HAWAII ELECTRIC LIGHT COMPANY, INC.  
P. O. Box 1027  
Hilo, HI 96720

WILLIAM A. BONNET  
VICE PRESIDENT  
HAWAII ELECTRIC LIGHT COMPANY, INC.  
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Certificate of Service

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San Francisco, CA 94104

Counsel for HELCO

  
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Karen Higashi

DATED: JAN 24 2008